

**OUTPUT DISTRIBUTION NETWORKS
IN THE AGRICULTURAL SECTOR IN RWANDA**

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Abstract

The production of horticultural crops in Rwanda is limited. This study examined three relatively important output sub-sectors. Potatoes, the most commercialized crop in Rwanda; dry beans, although a basic staple, the country is least self-sufficient in the production of this crop; and fresh fruits and vegetables--tomatoes, french green beans and bananas--which are important because of their export potential. Interestingly, and common to spot market transactions, most wholesale and retail sales of dry beans and potatoes are in cash. Little trade credit flows through the vertical marketing channel. Wholesale and retail operators, in addition to formal credit, draw upon informal loans from their fellow wholesalers and participate in tontines at the retail level, i.e. among each other. This horizontal channel of finance at both levels of the marketing chain stands out in sharp contrast to the classic wholesale-retail flows of trade credit common to many developing and developed countries. This likely reflects the lack of well established and secure trading relationships between wholesalers and retailers in these markets in Rwanda that discourage the acceptance of the risk of lending and borrowing. In contrast, the established association among those trading side by side creates sufficient confidence for reciprocal lending practices among these agents. There are several constraints to the promotion of non-traditional exports in Rwanda. These include the small land-holding structure, access to information and finance, air transportation costs, and last, the lack of refrigeration facilities at the airport in Kigali. Such facilities would involve large investments and would imply large costs for any single enterprise. However, investment in refrigeration facilities would reduce the constraints on export initiatives.

TABLE OF CONTENTS

I.	Introduction	1
A.	Background	1
B.	The Agricultural Sector	1
C.	Survey Design	2
II.	Agricultural Output Networks	3
A.	Parastatal Institutions	3
B.	Wholesalers	4
1.	Dry beans	4
2.	Potatoes	4
3.	Perishable fruits and vegetables	5
C.	Retailers	5
D.	Cooperatives	6
III.	Financial Contracts	6
A.	Wholesalers	6
B.	Retailers	7
IV.	Non-traditional Agricultural Exports	8
V.	Market Structure of the Agri-business Sector	9
VI.	Export Systems	11
VII.	Constraints on the Development of the Agri-business Sector	11
A.	Small Land Holdings	11
B.	Access to Information and Finance	12
C.	Transportation and Refrigeration Facilities	12
VIII.	Conclusions and Recommendations	12
	References	16

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I. Introduction

The agricultural sector continues to be an important economic sector for most African countries. The nature of the economic agents operating in the agricultural input and output markets largely affects the efficiency of these markets. Financial contracts servicing the flow of commodities in the marketing channels also have a direct impact on the evolution of these markets. Thus, documentation of commodity marketing systems, their stage of development, the nature of the agents involved in the marketing of these commodities, and the terms and conditions of the financial contracts used in their operations is necessary to understand the development of the private sector in the agribusiness sector.

A. Background

This study focuses on financial contracts in the agribusiness sector in Rwanda. Being a small landlocked country in Central Africa, with the highest population density in the continent (250 inhabitants per sq. km) and poor natural resources, Rwanda faces major challenges in its development. Although the share of agriculture in gross domestic product has declined from roughly 75 percent to about 40 percent over the past two and a half decades, the sector still provides employment to 90 percent of the population who live in rural areas. Over the past decade, Rwanda has shifted from surpassing its modest population growth with high agricultural production to a reverse scenario (World Bank, 1991). These pressures have pushed Rwanda from self-sufficiency to increased total food imports over the 1980s. Given rapid population growth and a fragile economy, the development of the agribusiness sector and the promotion of the agricultural marketing systems in Rwanda continue to be critical issues. The promotion of non-traditional exports to diversify foreign exchange earnings and the need to feed the growing population are two pressing reasons to develop agribusiness markets in Rwanda.

B. The Agricultural Sector

Agriculture production in Rwanda is characterized by smallholder farming where over half of the million rural households cultivate less than one hectare of land (World Bank, 1991). Cropland comprises roughly 50 percent of the total area and only seven percent of the total cultivated area is used for growing export and industrial crops. Farming technology is traditional and production is largely subsistence oriented (Von Braun et. al.). About 63 percent of the value of agricultural production stays on the farm. The traditional staples are dry beans, sweet potatoes,

cassava, sorghum and bananas--where the major cash crops, sorghum and bananas, are used in beer processing.

Major export crops are coffee and tea. These constitute about 95 percent of all agricultural export crops both in quantity and value of foreign earnings. Non-traditional exports include pyrethrum (3 percent of total agricultural exports), bananas, potatoes, fresh vegetables (green beans), ornamental plants and flowers. The export of these non-traditional crops began only in the past few years and they are all largely in their infant stages. The principal destinations of vegetable and banana exports are the EEC countries, Belgium and France in particular, and some regional countries including Burundi and Zaire for potatoes.

Apart from traditional staples, horticultural production in Rwanda is still minimal. Bananas are the most important fruit grown. Its relative share among the categories of agricultural products has been about 52-55 percent from 1989-92. The total share of fresh fruits and vegetables--excluding bananas and root crops--in total agricultural production is just two percent. The mean value of net sales of fruits and vegetables--excluding bananas and root crops--per household in Rwanda represents less than one percent of total household net sales (Loveridge). Agricultural commodities are marketed through various channels by formal and informal agents, depending on the product. This study will document and analyze these marketing networks and the financial contracts facilitating these transactions.

C. Survey Design

Information used to analyze the structure of the existing output networks in the agribusiness sector in Rwanda were gathered during October-November, 1993. The survey involved interviewing managers of institutions or proprietors of enterprises responsible for all purchases and sales. By surveying all types of economic agents--public and private--involved in the marketing process within each sub-sector, a reliable data set was constructed to describe and analyze the existing marketing systems and associated financial contracts in the agribusiness sector. Output marketing networks involve only one parastatal institution, a few cooperatives, and many private traders at the wholesale and retail levels. This survey of output dealers involved primarily two subgroups in addition to the parastatal institution and two randomly selected cooperatives. These subgroups of the data set involve a total of 21 randomly selected wholesalers and 15 retailers. It is important to note, however, that these entrepreneurs were chosen within the specific output sub-sectors considered in the study--dry beans, potatoes, tomatoes and green beans--for reasons that will be discussed below.

The following section presents an initial overview of the major participants in the fruit and vegetable sub-sector in Rwanda. Section three discusses the financial arrangements that accompany the sale of output. This is followed by a discussion of the non-traditional agricultural exports, the market structure, export systems, and the constraints on the development of the agribusiness sector in sections four, five, six, and seven. Finally, section eight draws together the conclusions and recommendations of the study.

II. Agricultural Output Networks

A recent study estimates the degree of commercialization of the 12 most important agricultural products in Rwanda (Loveridge, 1992). Among unprocessed products, about 35 percent of total potato production is sold, which makes it the most commercialized food crop in the country. However, given that Rwanda is least self-sufficient in dry beans, the demand for bean imports induces an active trade in this crop. Only 77 percent of dry beans consumed in Rwanda is locally produced (Loveridge, 1992). Dry beans and potatoes are, therefore, among the most dynamic output sub-sectors in terms of trading activities. Both crops are classified as semi-perishables. Among the perishable crops are fresh fruits and vegetables that represent only two percent of the total volume of agricultural production. These crops, however, represent a potential for export diversification, especially considering the demand in the European winter markets. Therefore, examination of the marketing of these crops is strategic to the development of the agribusiness sector in Rwanda.

Our study of the distribution of outputs through alternative channels is based on the modified sub-sector methodology.¹ Output networks are dependent on the specific sub-sector or product rather than the type of economic agent or institution handling the sale of these products. This section deals with the marketing of four crops: dry beans, potatoes, tomatoes and green beans. The various economic agents involved in the marketing of these commodities are identified in Figure 1. The production units are primarily the small-holder farmers and agricultural cooperatives; the marketing agents are wholesalers, middlemen/truckers, a parastatal institution which also sells in retail markets, and finally the retailers who sell directly to consumers.

A. Parastatal Institutions

OPROVIA (Office pour la Commercialisation des Produits Viviers, des Intrants Agricoles et des Production Animales au Rwanda) is a public institution that was established in 1975. It is the only parastatal institution that deals with the marketing of agricultural products and occasionally the distribution of agricultural inputs. OPROVIA is involved mainly in the marketing of non-perishable food products and semi-perishable crops. Semi-perishable crops, such as dry beans, potatoes and sorghum, are purchased from both wholesalers, middlemen or directly from farmers. All purchases made by OPROVIA were reported to be paid for in cash or by cheque. Suppliers who sell to OPROVIA, however, reported that they received payments for crops delivered in some cases after a month. This implies that OPROVIA receives some short-term trade credit from its suppliers. OPROVIA sells mostly at the wholesale level to public service institutions. Sales to the general public are in both wholesale and retail. The mode of payment by the general public is always cash. Public institutions, however, are typically billed which involves up to one month lag to consummate payments. Sale prices vary depending on the supply

¹ See Nagarajan and Meyer, 1993.

in the market. Typically, OPROVIA's retail prices are 10 percent higher than its wholesale prices.

B. Wholesalers

Wholesalers are at the junction of the marketing channel that links producers and consumers. These are typically traders who operate small scale enterprises, own or rent a store, hire a few employees--either on a permanent or temporary basis--and engage in the trade of one or more lines of products. There is another type of small wholesaler who operates in some cases between farmers and the store-wholesalers. These are the middlemen/truckers, i.e. traders who basically purchase products from farmers and deliver them to wholesalers in fixed locations or to retailers. Often the degree to which one type of agent dominates the marketing channel is explained by the sub-sector, i.e. the type of crop in question and the size of total production. Hence, the following subsections will discuss each group of wholesalers by the major type of product they trade.

1. Dry beans

Dry beans are a major staple in the Rwandan diet. Private wholesalers are the agents who play a dominant role in this market. Ten entrepreneurs in this group were interviewed to gather data on the nature of their operation. Farmers, truckers and occasionally OPROVIA are the principal suppliers for dry bean wholesalers. Regional imports are one of the supply sources transported by truckers mainly from Zaire, since domestic production is insufficient. As expected, the purchase price from the farm gate was lower than the price offered by truckers; however, the price offered by Zairian truckers was more competitive than the domestic price. The majority of purchases were reported to be in cash; however, most traders (70 percent) reported gaining access to trade credit occasionally from their suppliers to finance a small portion (about 10 percent) of their purchases. Advance payments were also reported to be made occasionally by some customers typically for one to two days covering about 50 percent of the total value of the contract. Wholesale traders sell in large part to retailers (almost 80 percent), to consumers, and occasionally to OPROVIA. Most payments are in cash; however, trade credit is granted on occasion to trustworthy clients.

2. Potatoes

The rapid increase in potato production in Rwanda in the past few years has contributed to an expansion in the marketing network servicing this crop. The enhanced yields in potato production, resulting from the increased use of modern inputs in rich volcanic soils, has permitted exports of potatoes to neighboring countries. These factors present a promising potential for the promotion of regional exports versus concentrating efforts on exports to the European market. The marketing of potatoes is conducted largely by private entrepreneurs. OPROVIA plays a minor role in the sale of potatoes to consumers in Kigali.

Wholesale activities originate from Ruhengeri, in the northern part of the country, where traders purchase potatoes from farmers. The market for potatoes, however, has been growing and expanding from Rwanda to Burundi, Uganda and Zaire. Potatoes are often sold by wholesalers in both small wholesale and retail markets. Wholesalers, therefore, are the principal agents who play a significant role in the marketing of this crop. Six potato wholesalers were interviewed in our study. The principal suppliers of potatoes are farmers and middlemen traders (truckers). Given the semi-perishability of potatoes, wholesalers made purchases on average three times per week. Payments were mostly in cash. Only one third of these traders reported having access to trade credit from their suppliers. Occasional advance payments to farmers were also reported by these wholesalers to guarantee access to stocks during deficit seasons. Wholesalers sell in large part to retailers (80 percent) and directly to consumers. Sale prices were reported to vary depending on the season. The majority of sales (80 percent) were in cash. Occasional trade credit and advance payments, however, were reported by some wholesalers.

3. Perishable fruits and vegetables

The perishable fruits and vegetables that are traded in wholesale markets are tomatoes and bananas. Four economic agents who trade in these crops were interviewed in the survey. One of the agents is an association of 22 traders who operate as a cooperative and sell tomatoes in wholesale. The wholesalers discussed in this sub-sector are truckers who purchase and sell stocks directly from their vehicles. This is explained by the degree of perishability of the crops in question. Thus, there are no wholesalers who store fresh fruits and vegetables in shops, given the lack of refrigeration facilities. Bananas are sometimes harvested green and stored by microentrepreneurs for future use in processing banana beer.

None of the tomato or banana wholesalers owned the trucks used for their trading activities and none employed permanent labor. They all purchased the products directly from farmers on a daily basis, stored them on the truck overnight and sold them to retailers at the market the following day. Occasional trade credit was provided by farmers for a part of the contract until the following day if the traders were short of cash. No advance payment was reported by these traders to secure access to produce. Wholesalers sell to retailers in the market at sunrise before consumers come to purchase their fruits and vegetables. Sales are mostly in cash; however, truckers supply some trade credit (10 to 15 percent of total sales) to their customers.

C. Retailers

Five retail markets operate in and around the capital, Kigali. Fresh fruit and vegetable retailers purchase products from middlemen who sell from their trucks or purchase directly from farmers who come to these markets. Some retailers are also farmers who sell a portion of their produce in the market. The sale of two types of crops, tomatoes and green beans, were examined in these retail channels for horticultural crops. Tomatoes were among the most abundant vegetables in the market and green beans represent an interesting crop because of their export potential.

A total of 15 retailers were interviewed during the survey. Two thirds of these traders are women. There seems to be few differences in the operations of these traders except for their sources of supply. Tomatoes, on the one hand, are supplied mainly by wholesalers who operate trucks and to some extent by agricultural producers. Green beans, on the other hand, are supplied mainly by farmers, sold by some producers in the market and to a very limited extent sold by traders. Prices of both crops varied depending on the supply and competition in the market. The method of payment was mostly cash, except for occasional one day credit, covering a partial amount of the stock. The principal buyers were private consumers and sales were mainly in cash. One day credit contracts were occasionally given for regular established customers if short of cash. Advance payments, however, were not reported to be given by these retailers to their suppliers nor did they generally receive any advances from their customers.

D. Cooperatives

Agricultural cooperatives are very popular in Rwanda. Among the various cooperatives, one in particular was identified in this study as being active in the production and sale of horticultural crops. This cooperative has operated for about 20 years and is located in the peri-urban region around Kigali. Members of the cooperative (130 total) grow various vegetables and fruits, such as green beans, tomatoes, carrots and onions, that are sold in a store the cooperative rents and operates in the city. The cooperative purchases crops three times per week only from farmer-members on a monthly supplier credit basis. That is, no down payment is made to the farmers at the time of purchase. The total quantity of crops is noted and the farmer signs a contract agreeing to receive the total payment at the end of the month. The cooperative sells in its store mostly to private consumers. Sales have been in cash for the past five years since the cooperative committee decided to stop all credit even to regular customers. One public program (an orphanage), however, purchases regularly from the cooperative on weekly basis with a credit arrangement. The orphanage receives a three month credit facility with no interest charges. The cooperative does not receive advance payment from any of its customers, nor does it sell on consignment.

III. Financial Contracts

Financial contracts vary among the different agents in the Rwandan output marketing channels. The principal difference is a function of the level of marketing, i.e. financial contracts at the wholesale versus the retail level.

A. Wholesalers

Trade credit contracts at the wholesale level are typically short-term, small size loans, with no reported interest charges or price mark-ups. They are often given with no collateral, or against post-dated checks and, in some cases, involve a signed contract between traders. In short, the average loan is extended for an average of 3 days and paid largely in full at maturity. A few

traders reported giving advances to their suppliers especially between harvests to guarantee access to produce. These contracts also include a small advance covering a few tons of produce, given for a very short-term, on average 3 days, and typically with no guarantee.

Financial contracts in which wholesalers were engaged were not principally made up of the limited trade credit they demanded and/or supplied. In fact, this type of financial instrument seems to represent a smaller portion of the overall financial services wholesalers utilize. Other types of financial contracts that wholesalers reported using include receiving and offering informal loans from and to other traders, formal loans from commercial banks, and participation in tontines. Informal loans are a popular source of short-term finance that was used by the majority (80 percent) of the wholesalers in the sample. These loans were given for periods ranging from a few days to three months, with no interest charges or collateral requirements. The demand for and supply of these informal loans was based on reciprocity between traders. In addition, Rotating Savings and Credit Associations (i.e. Tontines or RoSCAs) are also widespread among some of these traders (30 percent). These tontines included a mixed gender membership in two out of the four tontines documented among these wholesalers. Contributions were based on a weekly or monthly basis.

Wholesalers were also active customers of formal financial institutions. All the traders in this sample hold deposit accounts with at least one of the commercial banks in the country. Thus, it is not surprising to find that about half of these traders have demanded and gained access to formal loans in the past few years. These loans were all granted for a period of one year, at the current nominal interest (11-15 percent), and all secured by property collateral. Wholesalers, therefore, seem to be quite active in accessing various formal and informal financial contracts. What seems more atypical of this group of traders in Rwanda, compared to traders elsewhere, is the limited amounts of trade credit they receive from their suppliers and grant to their own customers.

Wholesalers dealing with perishable fruits and vegetables, in contrast to the larger and more established wholesalers who deal in semi-perishables, utilize fewer formal financial services. On the one hand, only 75 percent of the former group reported holding deposit accounts with a commercial bank and only 50 percent had requested and gained access to a formal loan. These formal loans were also smaller than those acquired by the semi-perishable wholesalers. The typical loan was given for an average period of six months, at the ongoing interest rate and secured by title to property. Participation in informal financial markets, on the other hand, was frequent. The majority of traders (75 percent) received and granted informal loans to other traders based on reciprocity. Moreover, the majority of these traders (75 percent) participated regularly in tontines. These tontines, in contrast to those among semi-perishable wholesalers, had an almost equal share of male and female members.

B. Retailers

Retailers rely mainly on retained earnings and informal finance. None of the 15 retailers reported ever demanding or using formal loans. However, almost all the retailers (93 percent) participated regularly in tontines. Most of these groups made contributions on a daily basis and a few had weekly rotations. The rotations were often determined by lottery. Informal loans among retailers were also reported by about 50 percent of this group. These loans were based on reciprocity. Thus, the information collected from retailers confirms that trade credit is limited within the marketing channels from wholesalers to retailers to consumers. The most common financial arrangements are cash purchases and sales, followed by informal loans made and received by the same type of economic agents, generally based upon reciprocity.

In summary, formal financial contracts are quite common among wholesalers, both in terms of loans and deposits, but they are almost non-existent among retailers. With respect to informal finance, as in the input networks, there is little trade credit flowing within the output marketing channels. Among the four sub-sectors considered, trade credit is most commonly observed among semi-perishables, especially the potato trade. The relative thinness of the vertical trade credit linkages may be contrasted with the abundance of the horizontal informal financial contracts among traders at the same stage in the marketing channel. That is, there exists a large amount of informal loans reciprocated among traders in the wholesaler group and similarly among traders in the retailer groups. Moreover, tontines are also popular among traders in each of these two groups. It can be concluded, therefore, that credit is not an important factor used to stimulate transactions among the various stages between producers and consumers. Rather it is popular among homogenous agents as a way to generate liquidity which may be used for a variety of purposes in addition to facilitating trading.

IV. Non-traditional Agricultural Exports

Non-traditional agricultural exports in Rwanda principally consist of vegetables, fruits, flowers and ornamental plants. These new export products have only emerged in the past two years and they represent only little more than one percent of total agricultural exports. Coffee is the leading agricultural export product, accounting for about 70 percent, while tea is in second place at 27 percent. Horticultural export crops, namely apple bananas, french green beans and potatoes, represent about 0.5 percent of total agricultural exports. As noted earlier, the share of fresh fruits and vegetables in agricultural production is only about 2 percent. Given this thin production base and small export activity, it was not difficult to identify the economic agents involved in the non-traditional agricultural export activity. Essentially two economic agents are currently involved in the export of horticultural crops from Rwanda.

The first exporter of non-traditional agricultural crops is the Project Loiret-Butare, which is a French NGO involved in the export of green beans to France. The project was initiated in 1987 with the reclamation of 87 hectares of swamp low-lands for agricultural production in

Butare, Southern Rwanda. The project receives an annual subsidy from the Loiret department in France to cover its operational costs. This initiative involves a group of local farmers who cultivate other subsistence crops in addition to green beans. The project provides extension services and quality control for green bean production, grown on about 30 hectares of the project area, and provides fertilizer and pesticides free of charge. Farmers, however, are under an obligation to sell green beans to the project. The green beans are sold by a wholesaler in Paris who has been purchasing the Loiret-Butare green beans on consignment for the past three years. The project produces about 150 tons annually. The wholesaler benefits from a 10-15 percent price margin following French price regulations. At the end of each month or two, the wholesaler sends a wire transfer payment for past consignments to the project manager in Kigali at one of the commercial banks. In effect, the project provides one to two months supplier credit to the French wholesaler marketing the beans in France. The major component of total costs is shipping cost because the green beans are shipped by air. The NGO/project manager reported losses for the first three years, 1988-90; however, since 1991 the project has been able to make some profits.

The second exporter of non-traditional agricultural crops is a private Rwandan entrepreneur who has been involved mainly in the export of apple bananas to Switzerland since 1991. This entrepreneur, in contrast to the Loiret project, is not involved in the production of the crop he exports. He manages the export operation by purchasing quality bananas one week in advance from outgrowers, hires trucks to pick up the crop on the delivery day from producers, collects the bananas and sorts out the export quality in one day, and, finally, ships them the next day by air to Paris and then to Geneva. Bananas of lesser quality are sold in the local market. The sale of export bananas, similar to green beans, is on consignment. The entrepreneur reported minimal losses due to the rejection of shipments. The bananas are harvested green which allows them about 7 days maturity before they reach the supermarkets in Switzerland in a ripened state. The Swiss importer pays the Rwandan entrepreneur through a wire transfer to one of the local commercial banks on average at the end of each month. Therefore, this entrepreneur is providing a one month supplier credit to the Swiss wholesaler. The entrepreneur reported that he is not making much profit; however, since this is only the second year of operation, the entrepreneur considers this still a promotional stage.²

V. Market Structure of the Agri-business Sector

Several factors influence the market mechanisms that predominate in the Rwandan agricultural output systems. The factors that shape these market mechanisms include asset specificity, production uncertainty, market uncertainty, access to financial markets and access to

² It is of interest to note that the Rwandan exporter established his Swiss market connection through having met the Swiss importer in previous years when the Swiss was working in Rwanda for a Swiss NGO.

information³ (Nagarajan and Meyer). The following discussion assesses how these factors influence the structure and performance of each of the output sub-sectors examined in this study.

The wholesale and retail trade in dry beans is characterized by spot market transactions. Wholesalers, although generally specialized in dry beans marketing, have a low investment in specific assets. There are relatively low production or market uncertainties in the dry beans sub-sector. Moreover, dry beans wholesalers utilize both formal and informal sources of finance. Interestingly, and common to spot market transactions, most sales are in cash. Little trade credit flows through the vertical marketing channel. Wholesale operators, in addition to using formal credit, obtain informal loans from their fellow wholesalers and participate in tontines at the retail level. This horizontal channel of finance at both levels of the marketing chain stands out in sharp contrast to the classic wholesale-retail flows of trade credit common in many developing and developed countries. This likely reflects the lack of well established and secure trading relationships between wholesalers and retailers in these markets in Rwanda which raises the risks of lending and borrowing. In contrast, the established relationships among those trading side by side in the market place creates sufficient confidence for reciprocal lending practices among these agents.

The potato wholesale and retail trade is also characterized by spot market transactions. Many potato traders are new entrants in the market indicating the low level of asset specificity needed and minimal sunk costs to carry out trading which facilitates entry into this market. Potato production faces few uncertainties with the use of modern inputs. More importantly, with unsophisticated local and regional demand for high quality products, and with high yields and returns, market uncertainties are very low and regional export opportunities are quite high. Potato wholesalers, similar to dry beans wholesalers, engage less in vertical trade finance relative to other types of informal finance, such as tontines and reciprocal credit among wholesaler networks. Formal finance was also reported to be quite accessible by these traders.

Perishable fruits and vegetables, tomatoes, green beans and bananas were examined at the retail and wholesale/export levels. Tomatoes and green beans were typically sold at the retail level in spot market transactions. The production of these vegetables although associated with relatively low asset specificity, does involve relatively high production and market uncertainties. Production uncertainties grow out of the difficulties to control quality unless cultivation is closely monitored, while market uncertainty is strongly associated with the high degree of perishability of these crops. Access to finance in the case of retailers was limited to informal finance, largely tontines, and access to information was limited to the specific local retail markets in which they sell their produce.

³ See Nagarajan and Meyer for a complete discussion of the impact of these factors on market mechanisms.

VI. Export Systems

The export of perishable fruits and vegetables was characterized by two market mechanisms. In the case of french green beans, on the one hand, a resource providing and production management contract is administered by the French NGO (Loiret-Butare). In order to ensure quality produce, this NGO provides modern inputs and seeds, technical assistance, agronomical supervision, packaging, and a marketing outlet for french beans outgrowers cultivating 30 hectares in the Loiret-Butare project. The project has access to finance and European market information, and has been exporting 150 tons annually for about 3 years. Thus, a certain amount of asset specificity clearly exists. The project has demonstrated a capacity to deal with production and market uncertainty by closely monitoring production and by selling on consignment to a wholesaler in France. The project has also dealt with financial requirements by drawing on a subsidy from the Loiret department and with informational requirements by gaining access to information about the French market. These factors illustrate the range and magnitude of large sunk costs required to initiate an export operation in the area.

In the case of the banana exporter, on the other hand, the contractual arrangement with banana outgrowers is a market specification contract. This contract involves only the marketing of the produce with production decisions left to outgrowers. The exporter has a low level of asset specificity and market uncertainties. However, this entrepreneur faces high production uncertainties from the small scale outgrowers typical of all farmers in the country. When initiating this activity, the entrepreneur had to incur some transaction costs to secure access to information and relied mainly on retained earnings from other business activities to finance his export business. There are no export finance facilities, venture capital companies or any other type of financial or non-financial export promotion assistance provided to entrepreneurs in Rwanda. The two cases discussed in this study represent the only initiatives for non-traditional agricultural exports in Rwanda. Although very limited, these case studies provide insights into the strengths and weaknesses of the non-traditional agricultural exports in the country.

VII. Constraints on the Development of the Agri-business Sector

A. Small Land Holdings

The most binding and difficult constraint into expanding the export potential in the country is the small land-holding patterns characteristic of most agricultural production. Large or medium sized commercial farms are not very common in Rwanda. This factor presents important production uncertainties for any marketing enterprise. It is particularly difficult to standardize production across a large number of outgrowers, especially when faced with high quality competition from Colombia and Kenya, the principal exporters of apple bananas and green beans to the European market.

B. Access to Information and Finance

A second constraint hindering the development of non-traditional agricultural exports is access to information and finance. These resources are costly for newly emerging private exporters to secure in Rwanda. However, bank financing is not the typical source of finance which economic agents use when engaging in new ventures. Evidence from the two case studies reported in this study indicate that retained earnings, savings and government funds have been used to initiate the export activity in Rwanda. This implies that private sector participation in non-traditional exports would have to utilize either personal funds for the investment stage initially or seek external finance from venture capital firms which are better suited to finance risky newly emerging activities than are banks or commercial lenders. The constraint is that there are no venture capital firms in Rwanda.

C. Transportation and Refrigeration Facilities

Air transportation costs are expensive and the availability of air freight services is limited in Rwanda. This is not surprising considering that Rwanda is a land-locked country in central Africa. Moreover, the lack of refrigeration facilities at the airport in Kigali makes the time between harvest and transportation of perishable fruits and vegetables very critical. Such facilities would involve large investments and imply large costs for the enterprise.

VIII. Conclusions and Recommendations

This study examined three relatively important output sub-sectors. These are potatoes, dry beans and fresh fruits and vegetables, in particular tomatoes, french green beans and bananas. The wholesale and retail trade in dry beans and potatoes are largely characterized by spot market transactions. Wholesalers, although generally specialized in dry beans marketing, have a low investment in specific assets. Many potato traders are new entrants in the market indicating the low level of asset specificity needed and minimal sunk costs to carry out trading which facilitate entry in this market. There are increasingly more dry beans wholesalers becoming involved in potato marketing. Potato production faces few uncertainties with the use of modern inputs. More importantly, with unsophisticated local and regional demand for high quality products, and with high yields and returns, market uncertainties are very low and regional export opportunities are quite high. Wholesale and retail operators, in addition to formal credit, draw upon informal loans from their fellow wholesalers and participate in tontines at the retail level. This horizontal channel of finance at both levels of the marketing chain stands out in sharp contrast to the classic wholesale-retail flows of trade credit common to more developed countries.

Perishable fruits and vegetables, tomatoes, green beans and bananas, were examined at the retail and wholesale/export levels. Tomatoes and green beans were typically sold at the retail level in spot market transactions. The production of these vegetables although associated with

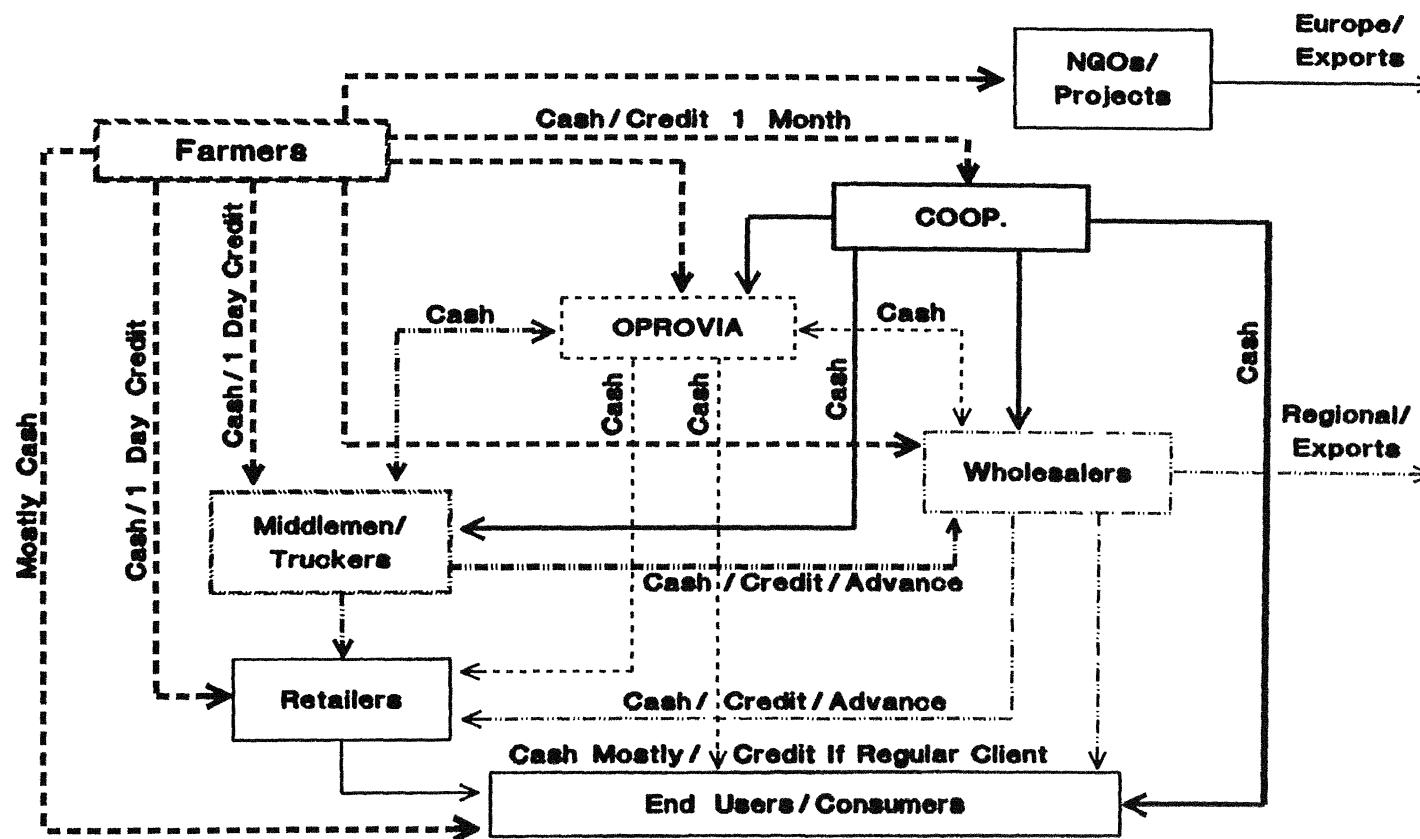
relatively low asset specificity, does involve relatively high production and market uncertainties. Production uncertainties grow out of the difficulties of quality control unless cultivation is closely monitored, while market uncertainty is strongly associated with the high degree of perishability of these crop. Access to finance in the case of retailers was limited to informal finance, largely tontines, and access to information was limited to the specific local retail markets in which they sell their produce.

The export of non-traditional crops from Rwanda is limited; however, there have been successful attempts to draw up contractual arrangements with green beans and banana outgrowers. These arrangements include resource provisions, production management and marketing outlets. The current export activities, however, are confined to small scale initiatives. Policy efforts should focus on reducing some of the constraints to promote private sector participation. The first and most difficult constraint to ease to promote horticultural non-traditional exports is the small land-holding structure in Rwanda possibly through more efficient cooperative farming systems or larger units of production. This constraint increases transaction costs and reduces scale economies of production. Moreover, this constraint hampers the production of consistent quality produce that has export potential. Technical assistance should attempt to train farmers to grow quality produce. A second constraint hindering the development of non-traditional agricultural exports is access to information and finance. These resources are costly for newly emerging private exporters to secure in Rwanda. Third, air transportation costs are expensive and the availability of regular and reliable air freight services is limited. Attracting airline companies to Rwanda would induce more competition in air cargo which would bring transportation costs more in line with market prices. Fourth, and last, the lack of refrigeration facilities at the airport in Kigali makes the time between harvest and transportation of perishable fruits and vegetables critical. Such facilities would involve large investments and imply a large asset specificity cost for any single enterprise. However, investment in refrigeration facilities would reduce the constraints on export initiatives.

The prevailing conditions in Rwanda present binding constraints on the development of non-traditional agricultural exports. Public sector and donor intervention, however, could ease some those constraints. These efforts could largely focus on providing the appropriate information, infrastructure and technical support to encourage export activities. A potential role for the government, in addition to improving the quality of physical infrastructure in the country, could focus on stimulating domestic linkages with export markets. Facilitating information flows about foreign markets could be achieved by sending local representatives abroad and providing information about domestic production to donors and foreign firms. Donors could play an important role in supporting local production of quality produce that has export potential. One way to encourage the formation of export firms is to stimulate the creation of venture capital firms. Supporting supply-leading credit programs, however, should be avoided. Donors should carefully assess the role of support institutions, such as NGOs and cooperatives, that advice farmers on how to grow quality produce. The provision of technical assistance and the dissemination of new technologies to small producers in order to ensure the cultivation of high

quality produce is the major challenge in the small land holding setting characteristic of Rwandan farmers.

Figure 1. Output Channels for the Distribution of Agricultural Output in Rwanda in 1993.



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